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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,821	07/16/2003	Vadim Kutsyy	CYTOP110	1277

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EXAMINER	
SKIBINSKY, ANNA	
ART UNIT	**PAPER NUMBER**
1631	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/621,821	KUTSYY ET AL.	
	Examiner	Art Unit	
	Anna Skibinsky	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

REQUEST FOR CONTINUED EXAMINATION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2006 has been entered.

Reply to Applicant's Amendments

Amendments to claim 15 is acknowledged. Claims 15- 26 are under examination.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 15-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 15-26 of copending Application No.10/595045. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are either species of the instant claims of have only minor differences encompassed by the instant generic claims

3. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

The rejection of claims 15-26 for non-statutory subject matter in the Office Action filed 7/28/2006 is withdrawn in view of Applicant's Remarks/Amendments filed 10/31/2006.

Claim Rejections - 35 USC § 112-2nd paragraph

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-26 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15, line19 recites "providing the ratio for a user" which is unclear because the phrase can be interpreted such that the ration is of a user. For the purpose of clarity and examination, the phrase will be interpreted as "providing a ration to a user."

2. Claim 25 recites the limitation "the on-target effect distance" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 25 is dependent from claim 24 which is dependent from claim 23, however, claim 23 recites "determining a target effect distance," which results in a lack of antecedent basis for the limitation "the on-target effect distance" in claim 25. For the purpose of examination, "a target effect distance" in claim 23 will be interpreted as "an on-target effect distance".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 15-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US Patent No. 6611833, filed June 23, 1999) in view of Friend et al. (US Patent No. 6,801,856, filed December 23, 1998).

3. As in instant claims 15-17, Johnson teaches a database of "blueprints" of cellular tissue where statistical characteristics of tissue are collected after a population of tissue is profiled through imaging methods (col. 1, lines 45-56 and col. 2, lines 14-48). The tissues are profiled and a plurality of structural indices are generated (col. 3, lines 5-59 and col. 4, lines 45-67). The distribution of measured characteristics are calculated and stored for "normal" and "abnormal" tissue (col. 5, lines 27-52). The "normal" and "abnormal" tissue can then be accessed by a user who would like to compare samples to the tissues in the database.

4. As recited in instant claims 15-17, the prior art of Johnson teaches the imaging (col. 2, lines 25-31 and col. 9. line 40 to col. 10, line 31) of a population of cells, creating the on-target effect signature which is the characteristic for which an index is measured for "normal" tissue, and a side effect signature which is the characteristic of "abnormal" tissue that is either stored in the database or in the possession of the user (col. 21, lines 24-43). Comparisons can be made between the features of the "normal" and "abnormal tissue".

5. The prior art of Johnson does not teach applying a treatment to the tissue (as recited in line 4 of instant claim 1) and creating a metric derived from an on-target signature and side effect signature to characterize the treatment (as recited in lines 15-16 of instant claim 1).

6. Friend et al. teaches obtaining a response profile for a compound to determine if the compound exhibits an "ideal" vs. a "non-ideal" effect. The prior art of Friend et al. teaches treating cells with a drug to measure drug effectiveness and toxicity (col. 2, lines 42-62). The

calculation of a similarity metric for comparing biological response profiles is also taught (col. 4, lines 27-38). The similarity metric is a cosine angle between projected and consensus response profiles which reads on the limitation of "a ratio on-target effect metric to side effect metric" to characterize the treatment (claim 1, lines 17-18) because a cosine angle is a ratio of distances. Additionally, a ratio is taught of activity levels of cellular constituents before and after perturbation (col. 14, lines 45-65) where equation equivalent to the ration is shown (Equation (1)).

7. As in instant claims 19-21, Johnson teaches deriving an "on-target metric" and "side effect metric" in the form of indices of "normal", "abnormal", and user introduced tissue. The metrics are the index values referred to throughout the text which are calculated from the various signature characteristics determined from the imaging. For example cellular DNA and mRNA characteristics and indexes are discussed (col. 15, lines 9-44). The control group (as recited in instant claim 20) is either the "normal" or "abnormal" tissue data in the database accessed by the user (col. 21, lines 24-43). The imaging (as recited in instant claim 21) is taught for profiling the tissue specimens (col. 3, lines 25-35).

8. Johnson does not teach varying the doses of treatment (as in instant claim 19).

9. Friend et al. teaches building "consensus profiles" for response of cells to various drugs by exposing them to graded levels of the drugs (col. 6, lines 1-19).

10. Johnson teaches the measurement of qualitative data from cellular features determined from images. The data can be accessed by users to compare different states the tissue against the tissue in the database to determine it there has been a response which is "normal" or "abnormal". Though Johnson recites that the inventions can be used for drug development, he does not

specifically recite varying the exposing the cellular tissue to treatment (instant claim 18). Additionally, Johnson does not perform calculations in multivariate space (instant claims 22 and 23).

11. Friend et al. however does teach exposing cells to drug treatment, monitoring them for "ideal" and "non-idea" effects, and based on generated profiles identifies compounds with the desired activity (col. 6, lines 1-19 and col. 8, lines 19-51). Additionally, the calculation of metrics are specifically taught (col. 4, lines 27-38). The use of multivariate space is used to calculate the biological profiles (col. 12, lines 41-62). Data is clustered and the distances between the clusters is calculated (col. 20, lines 30-40).

12. Claims 24-26 recite characterizing the treatment is based on the side effect distance and the on-target effect distance and generating a graphical representation of the side effect distance and on-target effect distance.

13. Friend et al. teaches the calculation of distances of a cellular constituent effected by the treatment (col. 20, lines 30-40) which inherently characterizes the treatment. Graphical representations of data are taught in Figure 7.

14. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have implemented the invention of Johnson where images of "normal" and "abnormal" cell tissues are taken and the quantitative properties of cellular features are measured to form indices that can be accessed and used for comparison. One of skill in the art would have been motivated to use such a system of categorizing cellular data since image analysis can reveal data about cellular states. One of skill in the art would have had the further motivation to treat the cells with various doses of drug candidates and determine the responses

with image analysis as taught by Friend et al. The classification of image data as taught by Johnson is not limited to tissue that is "normal" or "abnormal" and can be used to categorize and study the cellular expected or unexpected side effect response of cells when subjected to drug treatment because Johnson teaches drug design (Johnson, col. 21, lines 5-6). One of skill in the art would have had a reasonable expectation of success at using the imaging and measurement of quantitative characteristics of cells as taught by Johnson et al. (col. 1, lines 45-56 and col. 2, lines 14-48) on the drug candidate treated cells of Friend et al. The multivariate space calculations as taught by Friend el al. could have also formed the indices of quantitative values forming the database in Johnson et al. (col. 3, lines 5-59 and col. 4, lines 45-67). Therefore, the invention as a whole would have been prima facie obvious, absent evidence to the contrary.

REPLY TO REMARKS

15. Applicant's arguments filed 10/31/2006 have been fully considered but they are not persuasive.

Applicants argue that the on target effect signature and the side effect signature are both derived from the same population of cells and that the cell population of Johnson is not the same because he is analyzing "normal" and "abnormal" tissues, which are different cell populations.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., target effect signature and the side effect signature are both derived from the same population of cells) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 15, line 11 recites "creating a side effect signature" without specifying that this side effect signature is derived from exactly the same cells as the on target effect signature recited in line 7. Thus, the two signatures are not limited to being created from the same population of cells (i.e. exactly the same cells, per se). As such, the limitations of claim 1 reciting "applying the treatment to the population of cells" includes the embodiment that the cells may somehow be different yet, still grouped together as one population, e.g. "normal" and "abnormal" cells that come from the same source of tissue, as taught by Johnson.

Applicants argue (Remarks, page 7, lines 16-20) that the newly amended limitations reciting "providing a population of cells", which is taught by both Johnson (e.g. Abstract, lines 1-5) and Friend et al. (e.g. col. 1, lines 57-64, col. 8, lines 20-29), "applying a treatment to the population of cells, which is taught by Friend et al. (e.g. col. 2, lines 42-62 and col. 8, lines 20-51), and additionally "deriving a plurality of cellular features from at least a first captured image of the population of cells," taught by Johnson (col. 1, lines 45-56 and col. 2, lines 14-48).intend to limit the claim to deriving cellular features from a population of cells after treatment.

As reiterated in the above obviousness statement of record, it would be obvious to one of skill in the art to implement classification of image data of tissue that is "normal" or "abnormal" and as taught by Johnson to categorize and study the cellular expected or unexpected side effect response of cells that have been subjected to drug treatment, as taught by Friend et al. (col. 2, lines 42-62 and col. 8, lines 20-51).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Skibinsky whose telephone number is (571) 272-4373. The examiner can normally be reached on 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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